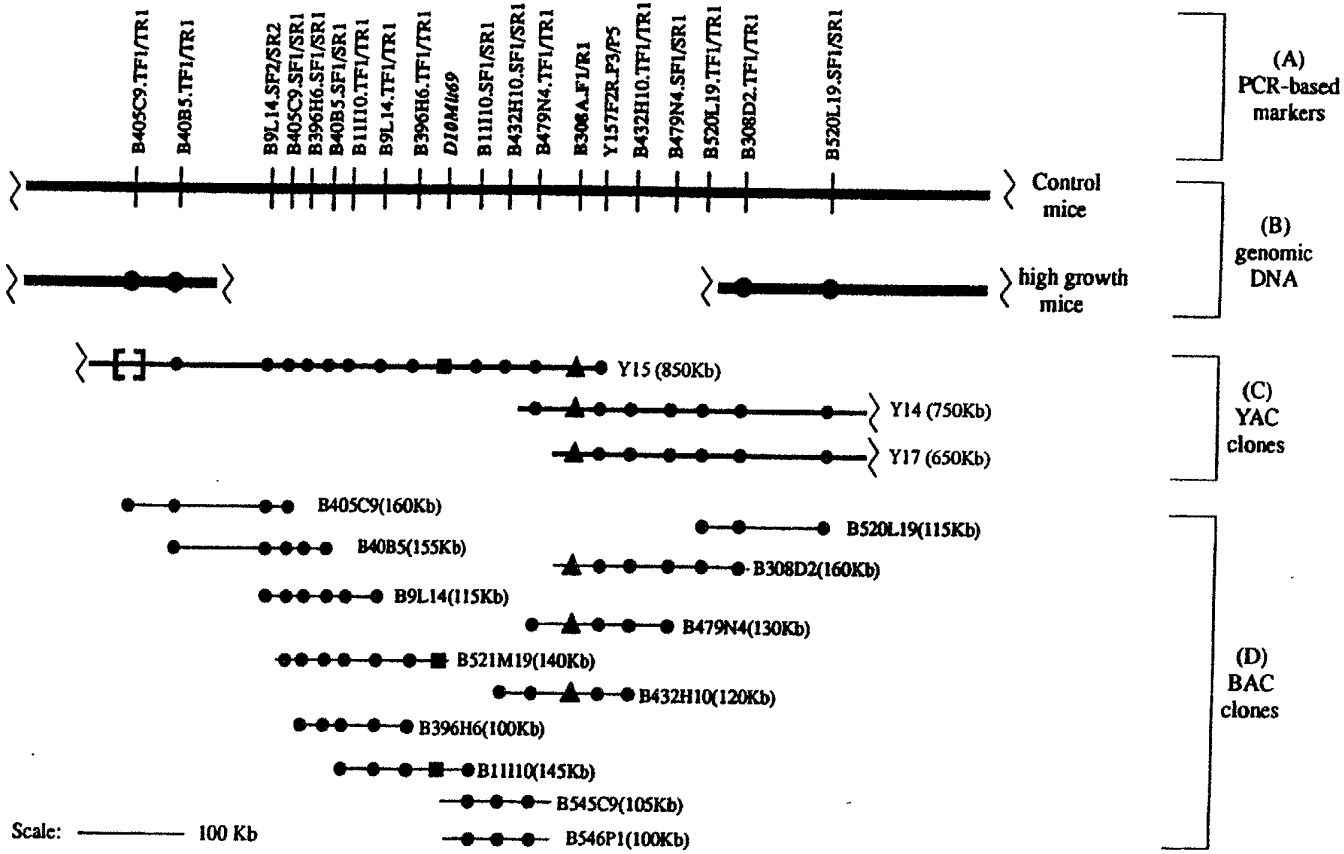

B405C9.TF1/TR1
B40B5.TF1/TR1
B9L14.SF2/SR2
B405C9.SF1/SR1
B396H6.SF1/SR1
B40B5.SF1/SR1
B11I10.TF1/TR1
B9L14.TF1/TR1
B396H6.TF1/TR1
D10M169
B11I10.SF1/SR1
B432H10.SF1/SR1
B479N4.TF1/TR1
B308A.F1/R1
Y157F2R.P3/P5
B432H10.TF1/TR1
B479N4.SF1/SR1
B520L19.TF1/TR1
B308D2.TF1/TR1
B520L19.SF1/SR1
(A) PCR-based markers
Control mice
high growth mice
(B) genomic DNA
Y15 (850Kb)
Y14 (750Kb)
Y17 (650Kb)
(C) YAC clones
B405C9(160Kb)
B40B5(155Kb)
B9L14(115Kb)
B521M19(140Kb)
B396H6(100Kb)
B11I10(145Kb)
B545C9(105Kb)
B546P1(100Kb)
B520L19(115Kb)
B308D2(160Kb)
B479N4(130Kb)
B432H10(120Kb)
(D) BAC clones
Scale: 100 Kb

Fig. 1

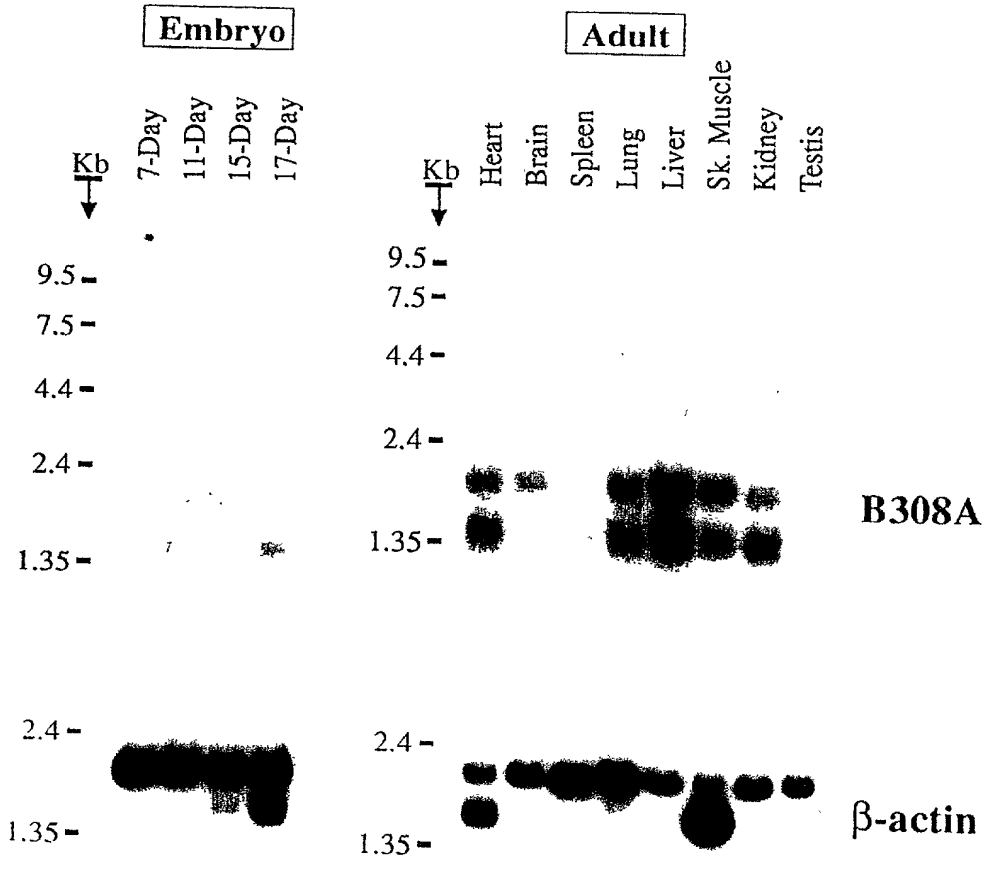

Embryo
Adult
Kb
7-Day
11-Day
15-Day
17-Day
Heart
Brain
Spleen
Lung
Liver
Sk. Muscle
Kidney
Testis
9.5
7.5
4.4
2.4
1.35
B308A
β-actin

Fig. 2

```
   1  TTGCCCTCAA CAAAGATGGT CTTTATGGTA CAGGTTCCCT AGCAGTCTGG
  51  ATTCCGGTTG TAGTTTTAGT TATTCTTTTT TTTTTTTTTT TAAACGGTAC
 101  GTGGTCGCAG ACGAAGAAAT GGAAGCCAGA GACAAGCAGG TACTCCGCTC
 151  CCTGCGTCTG GAGCTGGGTG CCGAGGTACT GGTGGAAGGA CTGGTTCTTC
 201  AGTACCTTTA CCAGGAAGGA ATTTTGACAG AAAACCACAT TCAAGAAATC
 251  AAAGCTCAAA CCACAGGCCT CCGGAAGACA ATGCTGTTGC TGGACATCCT
 301  GCCTTCCAGG GGCCCCAAAG CTTTTGACAC CTTCCTCGAT TCCCTCCAGG
 351  AATTTCCCTG GGTAAGAgAG AAGCTGGAGA AGGCGAGAGA GGAAGTCTCA
 401  GCCGAGCTGC CTACAGGTGA CTGGATGGCC GGAATCCCCT CACACATCCT
 451  CAGCAGCTCG CCATCAGACC AGCAGATTAA CCAGCTGGCT CAGAGGCTAG
 501  GCCCGGAGTG GGAGCCCGTG GTCCTGTCTC TGGGACTGTC CCAGACCGAC
 551  ATCTACCGCT GCAAGGCCAA CCATCCCCAC AACGTGCATT CGCAGGTGGT
 601  GGAGGCCTTT GTCCGCTGGC GCCAGCGTTT TGGGAAGCAG GCCACCTTCC
 651  TAAGCTTACA CAAGGGCCTC CAGGCAATGG AGGCTGATCC CTCCCTGCTC
 701  CAGCACATGC tGGAGTGACC TGACCCCCCC CCGCGCCCCC CCCCCACTTG
 751  CTGTGGGGGT GGTGGGGCGT GGGTTCCCAA GTCACACTGG CTGAACCGGA
 801  CTTTTCTCAG CAGGTGGCTT TGTTCTGGGC TTTTCAGTGA TCTGTTTACG
 851  GAAAGAGATC GTCCACCACT CACTCAACCA TCGATTGGCT TTAATTGCTT
 901  GAAGACTGCG CTGTTGTAAC TATGGTTTGG AACTTTGTGG CTGGCCTTTA
 951  ACAGGAGGCC AGAAAAAACA CAACACCCAC CCTACCCAAC CCCCCAAAAA
1001  ATCATGCTAC AGCATCGAAT GCAGGTGTCC TGCATACAAG GCAGCTACAC
1051  TTGTGTTGCC TGGAGACTGG ATTGTGCATT TAGCTCTTCA TAATGGTGAT
1101  GATAATAAAA AAGCAAATTG TGATATAGAA TGTGCCTCTT TCAATGAGAG
1151  AGTATTATAT CACACACACA CACACACACA CACACACACA TACACACACA
1201  CACACCAATC TTCTGTTGCA TAGACGGAGG GTGTAAAAAT ATGGGAGTGG
1251  AGCAAGATTG ATAGCAGTCA TGTGACGACG GAGATAAATA ACTCAGGCAG
1301  GATGTATAGA TTAAGCATGA GACACCGAAG CTCCCTGCAG AGGCCAGGGA
1351  GAGAACGGAA GACCTTCATC TTAACAAATT GTATGAGGAG TCTCTGTCCA
1401  TTTGTTAAAG GCATTGGATC AGAGACAAGA GGGCTCAGTG TTTCTCTTGA
1451  GGCCTGAATG GCTGAAGGCG GTGAGTTCCC GAGGGGCGTC ATGGGTTGTC
1501  CAGCCTTTCA TTAACTGCAC ATAGTGTTAG CCAGACAGGT GTACGTGTTT
1551  GTCATCCCAT CTAAGAGACT GAAGCAGGAG GATCACCTGT ACATGACTGC
1601  TTCTTTCAAC ATTTTAAAAT GTGTAACTTC TATTAAATTC TCTCAGTGCA
1651  AAAAAAAAAA AAAAAAA
```

Fig. 3A

MEARDKQVLRSLRLELGAEVLVEGLVLQYLYQEGILTENHIQEIKAQTTG
LRKTMLLLDILPSRGPKAFDTFLDSLQEFPWVREKLEKAREEVSAELPTG
DWMAGIPSHILSSSPSDQQINQLAQRLGPEWEPVVLSLGLSQTDIYRCKA
NHPHNVHSQVVEAFVRWRQRFGKQATFLSLHKGLQAMEADPSLLQHMLE"

Fig. 3B

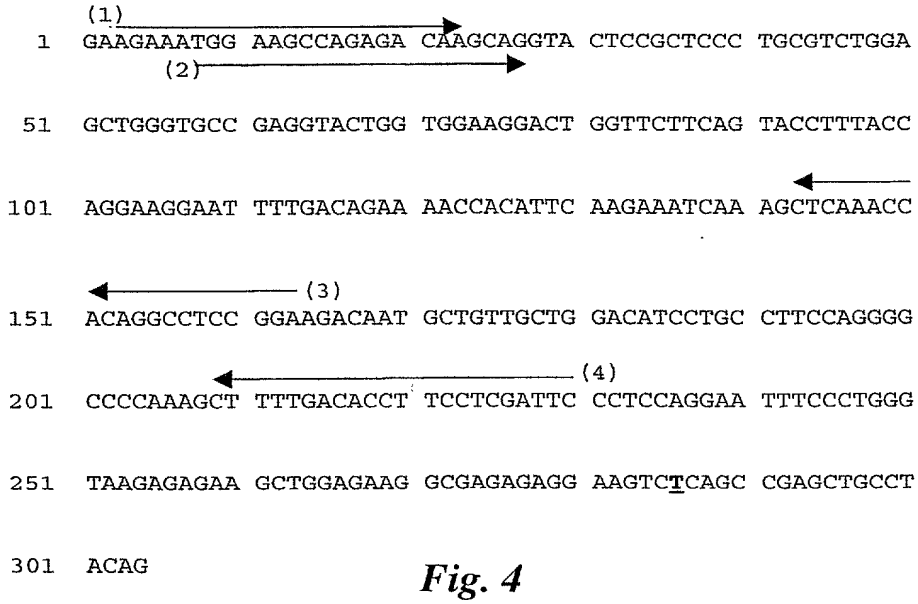


Fig. 4

1 ggaaatggag gctagagaca agcaagtgct tcgctccctt cgcctggagt
51 tgggtgcaga ggtactggtg gaggggctag tcctccagta tctttatcag
101 gaaggggtct tgacagaaag ccacgttcaa gaaattaaag ctcaagccac
151 aggcctccgg

Fig. 5

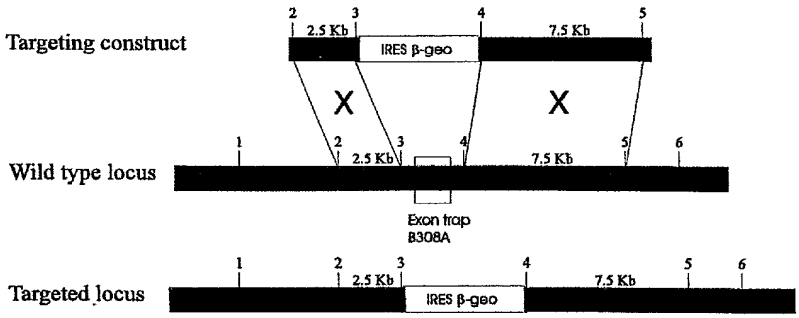

Targeting construct
2
3
4
5
2.5 Kb
IRES β-geo
7.5 Kb
X
X
Wild type locus
1
2
3
4
5
6
2.5 Kb
7.5 Kb
Exon trap
B308A
Targeted locus
1
2
3
4
5
6
2.5 Kb
IRES β-geo
7.5 Kb

Fig.6

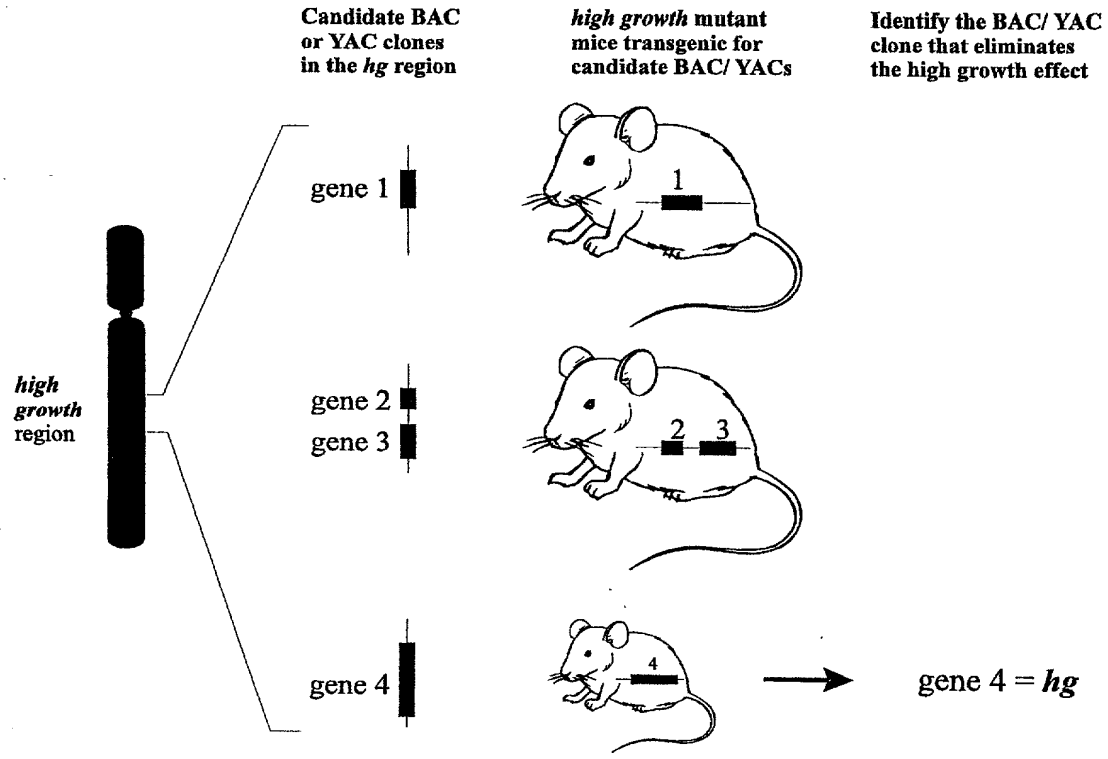

Candidate BAC or YAC clones in the hg region
high growth mutant mice transgenic for candidate BAC/ YACs
Identify the BAC/ YAC clone that eliminates the high growth effect
high growth region
gene 1
gene 2
gene 3
gene 4
1
2 3
4
gene 4 = hg

Fig. 7

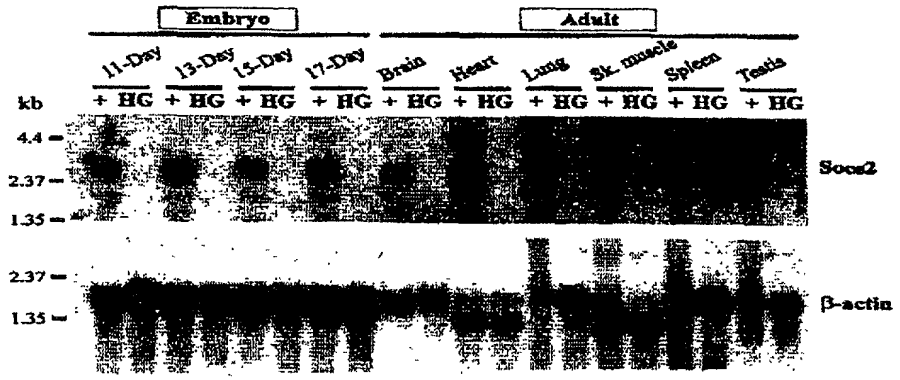


Fig. 8

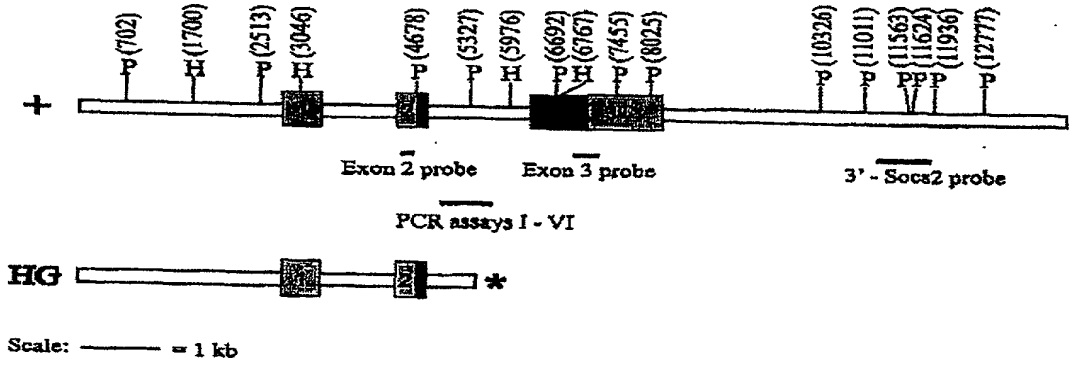


Fig 9a

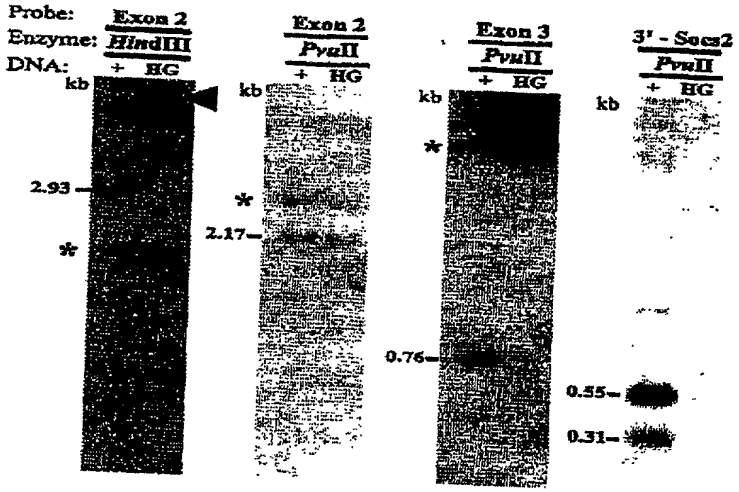


Fig 9b

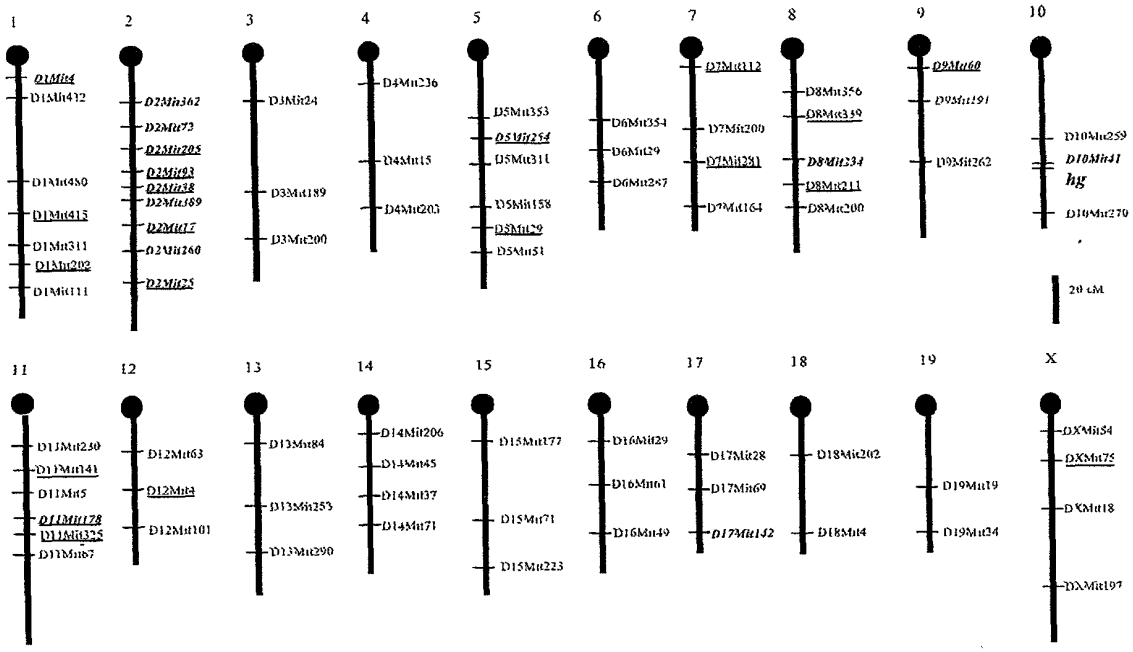
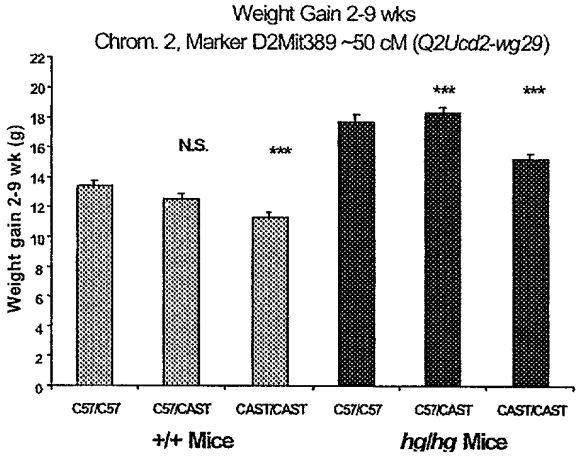
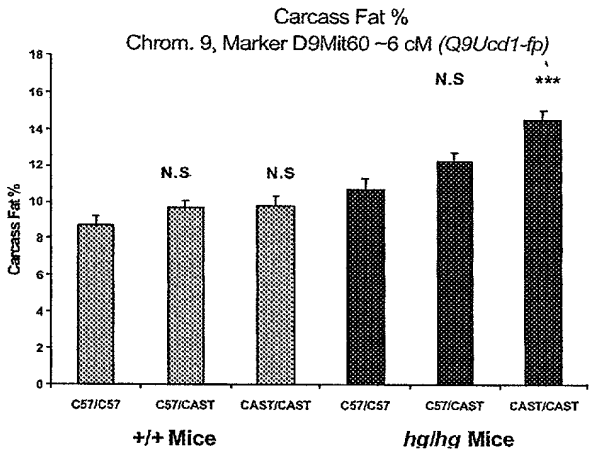
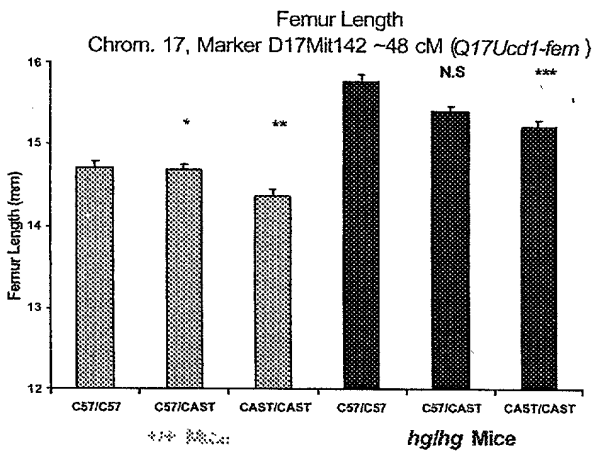

1
D1Mit4
D1Mit432
D1Mit480
D1Mit415
D1Mit311
D1Mit202
D1Mit111
2
D2Mit362
D2Mit73
D2Mit205
D2Mit93
D2Mit38
D2Mit389
D2Mit17
D2Mit360
D2Mit25
3
D3Mit24
D3Mit189
D3Mit200
4
D4Mit236
D4Mit15
D4Mit203
5
D5Mit353
D5Mit254
D5Mit311
D5Mit158
D5Mit29
D5Mit51
6
D6Mit354
D6Mit29
D6Mit247
7
D7Mit112
D7Mit200
D7Mit251
D7Mit164
8
D8Mit356
D8Mit339
D8Mit234
D8Mit211
D8Mit200
9
D9Mit60
D9Mit191
D9Mit262
10
D10Mit259
D10Mit41
hg
D10Mit270
20 cM
11
D11Mit230
D11Mit141
D11Mit5
D11Mit178
D11Mit325
D11Mit67
12
D12Mit63
D12Mit9
D12Mit101
13
D13Mit84
D13Mit253
D13Mit290
14
D14Mit206
D14Mit45
D14Mit37
D14Mit71
15
D15Mit177
D15Mit71
D15Mit223
16
D16Mit29
D16Mit61
D16Mit49
17
D17Mit28
D17Mit69
D17Mit132
18
D18Mit202
D18Mit4
19
D19Mit19
D19Mit24
X
DXMit54
DXMit75
DXMit18
DXMit197

Fig. 10


Weight Gain 2-9 wks
Chrom. 2, Marker D2Mit389 ~50 cM (Q2Ucd2-wg29)
Weight gain 2-9 wk (g)
N.S.
***
***
***
C57/C57
C57/CAST
CAST/CAST
C57/C57
C57/CAST
CAST/CAST
+/+ Mice
hg/hg Mice


Carcass Fat %
Chrom. 9, Marker D9Mit60 ~6 cM (Q9Ucd1-fp)
Carcass Fat %
N.S.
N.S
N.S
***
C57/C57
C57/CAST
CAST/CAST
C57/C57
C57/CAST
CAST/CAST
+/+ Mice
hg/hg Mice


Femur Length
Chrom. 17, Marker D17Mit142 ~48 cM (Q17Ucd1-fem)
Femur Length (mm)
*
**
N.S
***
C57/C57
C57/CAST
CAST/CAST
C57/C57
C57/CAST
CAST/CAST
hg/hg Mice

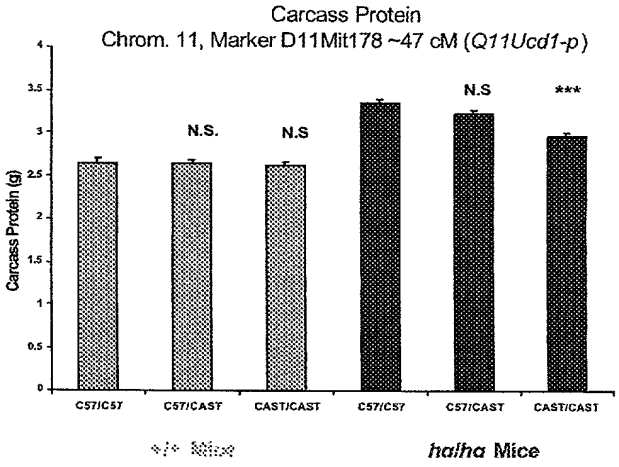
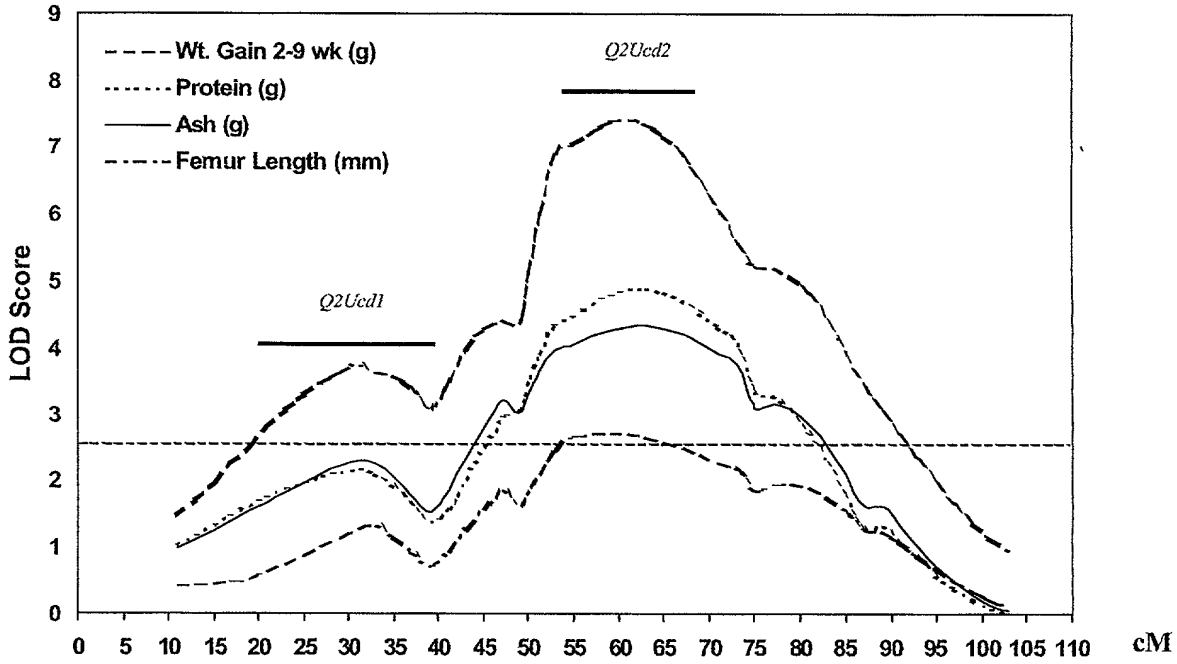

Carcass Protein
Chrom. 11, Marker D11Mit178 ~47 cM (Q11Ucd1-p)
Carcass Protein (g)
N.S.
N.S
N.S
***
C57/C57
C57/CAST
CAST/CAST
C57/C57
C57/CAST
CAST/CAST
ha/ha Mice

Fig. 11

A: *hg/hg* mice



B: +/+ mice

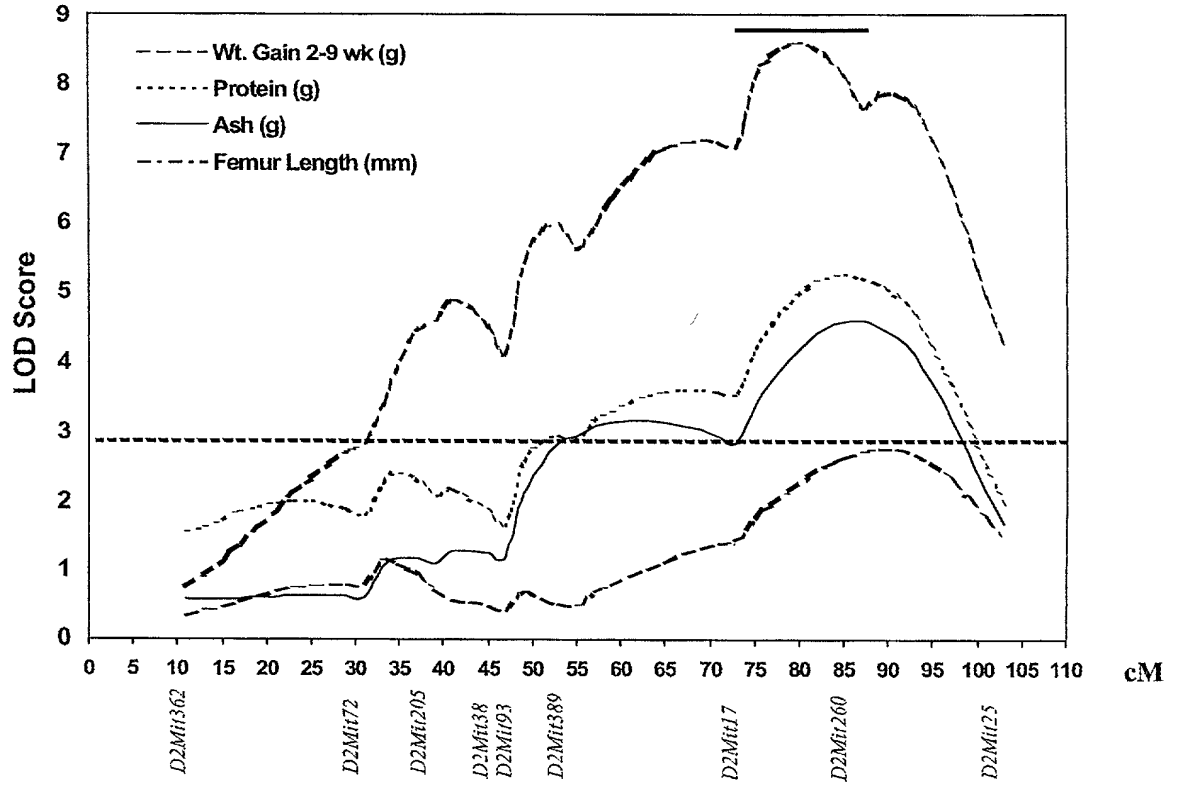


Fig. 12

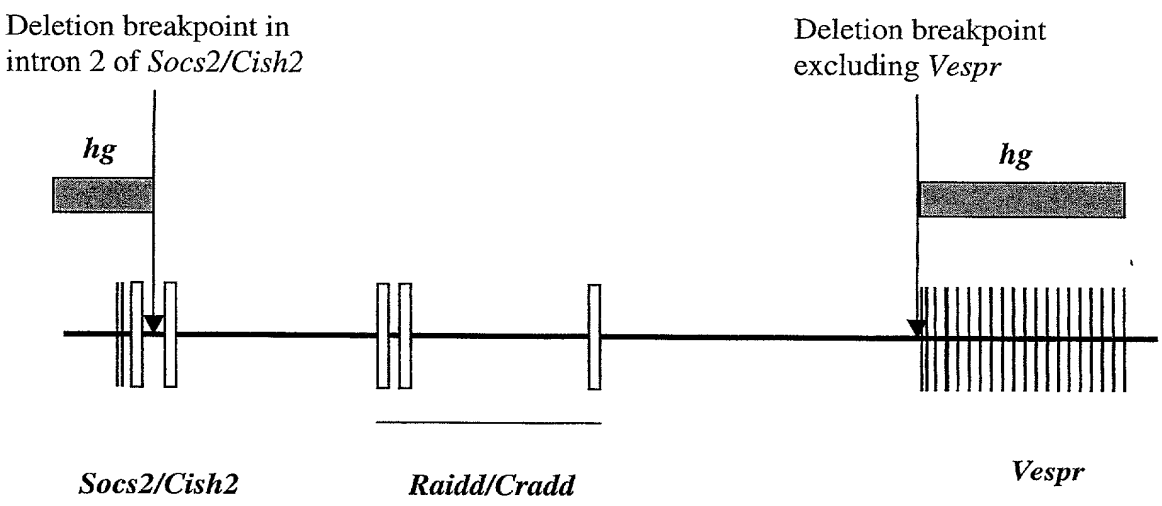

Deletion breakpoint in intron 2 of *Socs2/Cish2*
Deletion breakpoint excluding *Vespr*
hg
hg
Socs2/Cish2
Raidd/Cradd
Vespr

Fig. 13

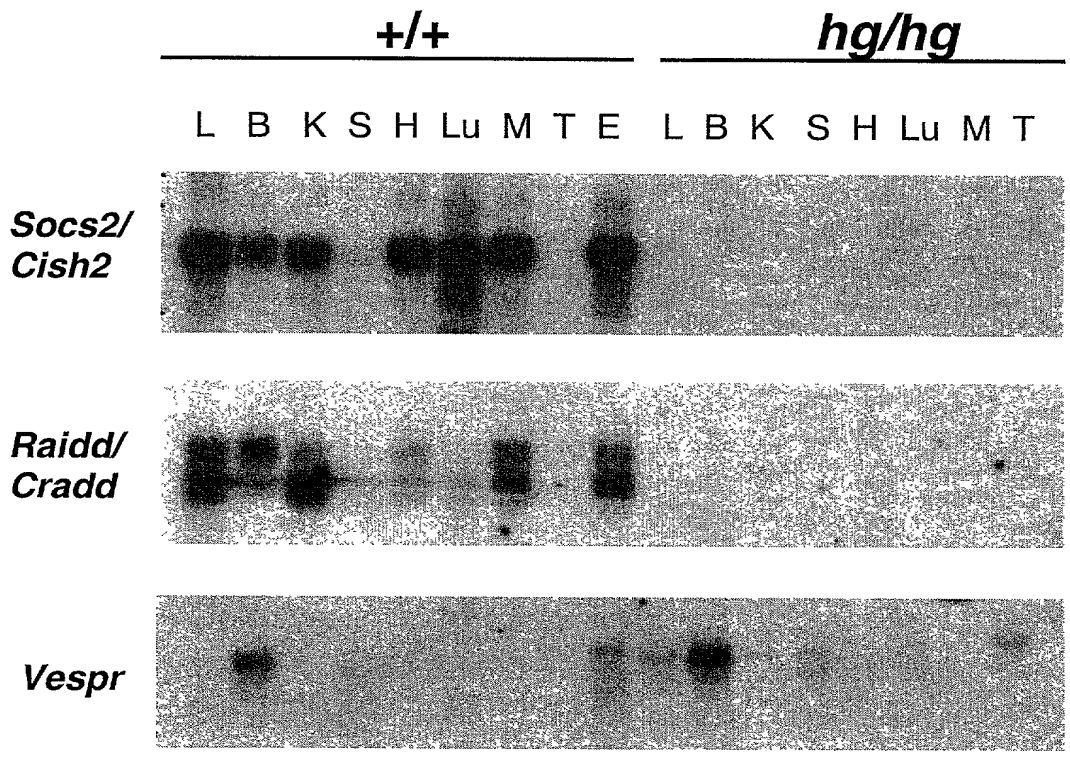


Fig. 14